For 1984, however, as part of a dispute between Congressional authorizing and appropriating committees over the proper level of funding for FAA facilities and equipment, none of the FAA operating costs are to come from user fees. 11/ This has led to legislative proposals in committees of both the Senate and the House to lower aviation user fees, 12/ especially since the fund already carries a large uncommitted surplus of $1.82 billion. However, while such a reduction appears justifiable for commercial airline users--who already pay more than their estimated share of FAA costs--it seems unjustified for general aviation users, who continue to pay less than their share even under the lower FAA appropriation for 1984.

Restricted application of user fees is often argued on grounds of the benefits arising from aviation use and permeating the economy. Indeed, aviation services increase employment, improve the nation's trade balance, enhance communications and postal services, and generally improve the well-being of all U.S. residents. Virtually any enterprise generates such spill-over benefits, though few generally justify government subsidy. Abandonment of the cap would therefore be an appropriate step toward full cost recovery.

Administrative Issues

Many general aviation users oppose a federal fuel tax, calling instead for a more sensitive charging mechanisms, that would allow flyers who require little or no service from the FAA to contribute proportionately little to FAA revenues. Unlike the weekend pilot, the farm crop duster, or the fish spotter, who fly according to visual flight rules, a corporate jet operates virtually all its flights according to FAA instrument flight rules, whereby FAA personnel are in constant contact with the plane from the

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11. To encourage the timely appropriation of all funds authorized for the FAA's National Airspace System Plan, the Airport and Airway Development Act of 1982 stipulates that any reduction in the authorized amounts for the plan be matched with a reduction in trust fund expenditures for operations and maintenance on a two-to-one basis. Thus the reduction of $640 million under the Department of Transportation Appropriations Act of 1984 translates into a $1.3 billion reduction in trust fund operating expenditures.

12. S. 1844, H.R. 4054, and H.R. 4055. These proposals would reduce the 8 percent passenger ticket tax to 6 or 7 percent, while user fees for general aviation jet fuel would be reduced from 14 cents per gallon to 12 cents per gallon.

moment it taxis to a runway to its arrival at its destination. Nonbusiness general aviation still draws indirectly on certain FAA services (for example, FAA-operated radar warns commercial jets of nearby general aviation airplanes), but the cost of such services is slight compared to that of the whole range of aids provided to instrument fliers.

Direct taxing methods--fees directly geared to use of the national airspace system--have been proposed as an alternative to the perceived inequity of a uniform-rate fuel tax. These would be air traffic controls equivalent to the specific fees considered in other chapters. From the point of view of efficiency, such taxes are by far the better approach, as each user would be charged only for the services he actually consumed. Although direct aviation user charges have appeared impractical in the past, under the National Airspace System Plan, the FAA would introduce a new radar system capable of identifying and monitoring each aircraft that uses the air traffic control system. 13/ Data from this system, when available in the early 1990s, could provide the needed detailed record of services provided to each aircraft, and owners could then be billed for exactly those used. (A similar system of charging for air traffic control services is already in effect in Europe.)

A sales tax on general aviation avionics equipment is another mechanism that has been proposed (by the Carter Administration) as a means to recover a proportionately greater share of FAA costs from heavy instrument users of the national airspace system. Alternatively, a tax on new plane sales would not penalize those who have already purchased planes, assuming that user fees would remain low. Either of these alternatives to a fuel tax could create administrative problems in the areas of tax evasion, safety, and privacy. By flying "outside" the airspace system (that is, by a pilot's turning off the avionics instruments in the cockpit) or by simply choosing not to equip the airplane with such instruments, users could avoid both direct user fees and instrument taxes. Such evasive practices could also compromise the national airspace system's safety (the primary responsibility of the FAA) by denying air traffic controllers crucial information regarding the whereabouts of aircraft. Also, government monitoring of individual travel activities could be opposed legally as an invasion of privacy.

On balance, the fuel tax might present the least administrative difficulty. Such a tax offers no safety-related problems. Moreover, it is not actually insensitive to the level of use of FAA services by recreational versus business general aviation users, because business planes are flown a

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13. See Congressional Budget Office, Improving the Air Traffic Control System.

greater number of hours per year and burn more fuel per hour. Thus, the fuel tax would generate revenue roughly in proportion to the consumption of FAA services, although much less precisely than would direct fees. A drawback is that recreational and certain other fliers would be charged even when not using the system. Also, full-cost recovery would require fuel taxes of about $1 a gallon--high enough to encourage tax evasion.

ECONOMIC EFFECTS

In moving to a more efficient structure of aviation user fees, higher costs and prices for aviation users could dampen production and employment in the aircraft industry. These would be transition costs in the sense that self-sustaining user fees would, in the longer term, result in a net gain for the economy as a whole.

Costs and Prices. With peak-hour surcharges at air carrier airports, all airport users would experience a major reduction in congestion and delay. The Port Authority of New York and New Jersey's 1968 decision to quintuple peak-hour minimum landing fees for general aviation, from $5 to $25, for example, brought about an immediate decline in aircraft delays of 30 minutes or more. 14/

On the other hand, higher landing fees would have distinct implications for each user group. Commercial airline passengers would likely see little effect on fares. Moreover, airlines schedule flights when they think passengers want to fly and they would probably absorb moderate increases in peak landing fees to continue providing service at those times. Even a steep increase in landing fee--say several hundred dollars--would add only about 2 percent to the total operating costs of a large jetliner. Such an expense could be passed on to the passenger as a relatively small increase in fares. Although current financial difficulties facing the airline industry could make it difficult to pass on the cost immediately, airlines could benefit from shortened delays and more available landing slots at peak periods.

General aviation users, on the other hand, would be more sensitive to increased landing fees. Relatively modest peak-hour landing fees at Kennedy and LaGuardia resulted in a 30 percent decrease in general aviation traffic at those airports. How much of that drop was attributable to trips not made, trips diverted to other means of travel (such as commercial airlines), or landings diverted to reliever airports is not known. Some

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14. See Federal Aviation Administration, Airport Quotas and Peak Hour Pricing: Theory and Practice (1976).

personal cost and inconvenience seem inevitable, particularly for recreational as opposed to business general aviation users.

Production and Employment. Literally thousands of firms--aircraft and avionics manufacturers, airframe repair shops, flight instructors, insurance companies, and banks--purvey to the owners of general aviation aircraft. Together, sales for these firms totalled $4.2 billion in 1981, a year of quite deep general economic recession. Higher general aviation user fees could dampen the economic performance of the general aviation industry, producing losses in sales, profits, and employment. Recently, though, the general aviation industry has seemed able to sustain a quite healthy condition despite fluctuations in the surrounding economy. Despite rising fuel costs, recession, and a sharp decline in recreational aircraft sales, for example, general aviation aircraft manufacturers posted record aircraft billings of $2.92 billion in 1981, up 17.5 percent from 1980, and the ninth consecutive year of unprecedented sales. Billings fell off by 32 percent in 1982, however--largely as a result of high interest rates--though sales and billings turned up again in 1983.

The pace of jet and turboprop sales mirrors the industry's performance. Increased sales in 1981 more than offset declines in the light recreational airplane market, mainly because the substantially higher price of a jet aircraft outweighs the diminished number of such aircraft. This is significant not only to the aircraft manufacturers, but also to related industries, particularly avionics manufacturers, insurance companies, and maintenance firms, since jets and turboprops account for nearly two-thirds of all hours flown by general aviation aircraft.

Recreational pilots are considerably more sensitive to economic conditions than are corporations. Thus, despite the overall health of the general aviation industry in recent years, sales of nonbusiness aircraft in 1981 were off by more than 50 percent from 1979, and manufacturing employment in that sector of the industry declined accordingly. But the bulk of the federal subsidy to general aviation is caused by corporate jets, not by the recreational fliers, so that an equitable set of federal user fees should affect this part of the industry relatively little.

The specific effects of increased user fees in the nonbusiness aircraft sector would depend on the relationship of fuel prices to overall flying costs and on the sensitivity of users to fuel price increases. At present, fuel accounts for about 20 percent of annual flying costs for the typical general aviation user. Thus, while a $1 per gallon fuel tax would increase fuel prices by about 70 percent, total flying costs would rise by only about 14 percent. Changes in general aviation activity as a result of past increases in fuel prices demonstrate that such increases have a perceptible but relatively small influence on aircraft use, particularly corporate jets. A fuel price increase of 10 percent appears to cause a reduction in general aviation activity of about 2 percent. Accordingly, the 70 percent increase in fuel prices necessary to achieve full-cost recovery might reduce overall general aviation activity by about 14 percent.

CHAPTER VI. POSTAL SERVICES

Increased mail rates for small-circulation newspapers, educational institutions, philanthropic and religious groups, and other not-för-profit organizations could recover some 95 percent of the $760 million appropriated in 1984 for preferential Postal Service treatment. Otherwise self-supporting from stamp sales, the Postal Service still receives selective annual support out of general tax collections. Federal subsidies for certain mailers, notably the visually handicapped, would probably be continued.

In the course of a year, the U.S. Postal Service handles more than 114 billion pieces of mail, both regular mail and such special postal services as Express Mail and Special Delivery. The cost of providing these services totals $24.4 billion a year. Most of this sum is recovered by a user fee so familiar it is rarely recognized as such: the postage stamp. But several groups of Postal Service users pay less than the full costs of the services they receive. 1/ These favored users, comprising many not-for-profit organizations and small-circulation newspapers, use mailing services at rates that are subsidized by the general taxpayer through the so-called "revenue forgone" appropriations voted each year by the Congress. In approving the appropriations, the Congress explicitly identifies certain groups for special Postal Service treatment. The value of these subsidies will total about $760 million in 1984, or about 3 percent of that year's Postal Service revenues. 2/

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1. For the cost of providing unpaid mail service to individuals with franking privileges--current and past elected officials and their widowed spouses--the Postal Service is reimbursed by a lump-sum appropriation to the Legislative Branch transmitted to the Postal Service and recorded as revenue. Franked mail, therefore--though free to the immediate user--does not generate a subsidy.

2. The Postal Service also benefits from smaller, indirect subsidies to cover certain costs of compensation. These are examined in a forthcoming CBO study.

Established by the Postal Reorganization Act of 1970, the Postal Service is now an independent, self-supporting agency of the federal government. Before the reorganization, mail rates under the U.S. Post Office bore little relation to the actual costs of service, and mail delivery was heavily subsidized. Under the Post Office system, the general taxpayer was asked to support artificially low mail rates, which favored certain individuals and organizations over others and encouraged inefficient overuse of postal services. At the heart of the 1970 reorganization was the intent to transform the postal system into a fundamentally self-sufficient concern designed along the lines of a private corporation, with users paying the costs of the services they receive.

The businesslike system based on the "user pays" principle--as most of the Postal Service now is--distributes the costs of postal operations so that individuals generally pay only for the services they receive. This approach has improved the efficiency of postal operations, because users faced with paying full costs tend to tailor their demand for services to their needs. For example, the Postal Service now offers guaranteed overnight mail delivery for a substantial premium over regular first-class rates. With the selective special subsidies still in effect, however, the potential improvement in Postal Service efficiency appears incomplete, raising the possibility of even greater use of user fee financing. As the Congress considers this prospect, it will have to recognize that even partial withdrawal of postal subsidies could create difficulties for individuals or organizations that it has in the past chosen to assist.

THE CURRENT SUBSIDIES

Even though the new Postal Service was to operate essentially as a self-sustaining entity, the 1970 act designated two categories of service for continued federal subsidies: 3/

- **Public Service**, designed to assure regular and universal service; and

- **Revenue Forgone**, or reduced rates for selected groups, including religious and other not-for-profit organizations,

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3. A third category of approved subsidies was for the nonfunded liabilities of the former Post Office Department, consisting of accrued but unused annual leave and employees' compensation for injuries. No funding was authorized for the 1982-1984 period, but the amounts (totaling $197 million) that were accrued in these years are expected to be requested by the Postal Service in its 1985 authorization.

visually handicapped persons, small-circulation newspapers, and libraries.

The public service function, which generally involves assuring universal postal service to all communities (including six-day mail delivery, rural service, and uniform nationwide rates) has been judged by the Congress to be in the national interest, and it is thus eligible for continued subsidy. The "revenue forgone" appropriation was intended to promote the flow of news and of educational, charitable, and cultural materials. In large part, these programs reflected an effort to ease the transition from the old, heavily subsidized postal system to the "user pays" framework of the new Postal Service.

Public Service Subsidy

Originally, the public service subsidy was authorized at 10 percent of the Postal Service's 1971 budget, or $920 million (in then-year dollars). The 1970 act provided for continuation of this subsidy until 1980, at which time it was to diminish by 10 percent a year until reaching $460 million in 1984. The Carter and Reagan Administrations have significantly hastened the decline in this subsidy, however. The Congress appropriated only $12.1 million for public service costs in 1982, 4/ and no funding was provided in 1983. The Postal Service expects to absorb this cut by increased productivity, higher mail volume, and other actions, rather than by raising general mail rates. 5/ (Increased postage rates and improved productivity, together with slowed inflation growth, enabled the Postal Service to produce a net income in 1982 of $802 million, sufficient to postpone an expected 1983 postal rate increase.) Though this eliminates the federal subsidy, some public service activities will continue to receive a cross-subsidy from other postal users, who will pay rates higher than they would otherwise.

Some inequities result from the national policy of having unvaried postage rates for a single class of mail--most important is the 20-cent rate for first half-ounce of first-class matter mailed anywhere in the country--rather than rates adapted to reflect differing distances and costs.

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4. A sum of $220.8 million was originally appropriated, but a rescission of $208.6 million was enacted in P.L. 97-257, effective September 10, 1982.

5. Testimony of William F. Bolger, Postmaster General, before the House Subcommittee on Treasury, Postal Service, and General Government Appropriations, February 9, 1983.

Mail that uses short, high-density routes pays more relative to mail sent over long, low-density routes, meaning that urban mail appears to overpay relative to rural. Even users that presort their first-class mail and receive reduced rates for presorting--including many businesses--appear to pay more than the costs they impose.

Revenue Forgone Subsidies

The revenue forgone subsidies benefit four major types of subsidized mail:

- **Preferred second-class**, including in-county mailings by small-circulation newspapers, farm technology publications, not-for-profit organization periodicals, and materials for classroom use;

- **Non-profit third-class, bulk rate**, including not-for-profit organization bulk mail and bulk mailings by national and state political party committees;

- **Preferred fourth-class**, such as books, films, and other educational materials exchanged among schools or libraries, and books shipped to school bookstores; and

- **Free mail**, including free materials for use by the blind or other persons who cannot read conventional printed matter; sound reproductions, braille writers, or other devices specifically for use by a visually handicapped person; and certain free balloting material for civilian and military personnel voting overseas.

The revenue forgone subsidies include phasing appropriations and continuing appropriations. By providing for gradual reductions in postal rate subsidies, the phasing appropriation was intended to lighten the burden on groups affected by the change-over from the old subsidized system. The phasing appropriation was originally planned to extend through 1987, but under present funding schedules, it would terminate two years earlier. The subsidy reduces mailing costs for these groups by an average of about 5 percent.

The second category, called continuing appropriations, supports a permanent rate differential that benefits the same groups that receive the first category of transition subsidies. Essentially, the preferred mailer is not asked to contribute to the Postal Service's overhead costs equal to an additional 27 percent reduction in costs. The taxpayer makes up the difference between what the preferred mailer pays and the commercial rate for the same piece of mail. In 1983, the Congress appropriated $789 million for revenue forgone subsidies (including both phasing and continuing appropriations). Projected federal outlays for 1984 will total $760 million (see Table 16). By far the largest portion of the subsidy benefits not-for-

TABLE 16. PROJECTED FEDERAL OUTLAYS AND RECOVERABLE COSTS FOR U. S. POSTAL SERVICE REVENUE FORGONE SUBSIDIES, TO 1988 (In millions of dollars)

	With No Rate Increase		With a Rate Increase			
	1984	1985	1986	1987	1988	Five-Year Total
Projected Outlays	760	798	836	871	905	4,170
Total Costs Recoverable Through User Fees a/	715	751	786	819	851	3,922

SOURCE: Congressional Budget Office.

a. Excludes subsidy for free mail for blind or otherwise visually handicapped persons and for overseas voting.

profit organizations--more than $500 million in revenue forgone appropriations in 1981. Most of this amount--about $420 million--goes for third-class bulk mail (see Table 17).

Shortcomings of the Present System

Reduced rates assist a large and diverse assortment of Postal Service users. Over time, the terms and administration of these rates have grown increasingly complex. At present, not-for-profit organizations--religious, philanthropic, educational, labor, and veterans' groups--qualify for these lower rates, as do public libraries, schools and universities, small-circulation newspapers, and national and state political party committees. Many of these postal subsidies may not be well targeted to achieve the intended

TABLE 17. REVENUE FORGONE SUBSIDIES BY CLASS OF SERVICE, 1981 (In millions of dollars)

Class of Service	Phasing Appropriation	Continuing Appropriation	Total a/
Second-Class	120	45	165
Third-Class, Bulk Non-Profit	221	199	420
Fourth-Class	26	43	69
Free for Blind and Handicapped	--	24	24
Total	367	311	678

SOURCE: Congressional Budget Office.

a. Total appropriations received for fiscal year 1981. Audit of mail volumes indicates, however, that an additional subsidy of $162 million would be necessary to reimburse the Postal Service fully for those services. Accordingly, as required by 39 U.S.C. 2401(c), the Postal Service has requested a "reconciliation adjustment" for this amount in its 1984 budget request.

circulation of news and educational, cultural, and charitable materials. The qualifications for the reduced rates seem arbitrary in some cases; for example, civic associations, such as the Rotary and Kiwanis clubs, must pay the regular commercial rates, while fraternal organizations (including college fraternities and sororities) enjoy subsidized rates. If the federal government did not subsidize postal rates for small newspapers, then the full cost of postal services ultimately would be passed on to subscribers, publishers, or advertisers.

Many preferential rates, because of their complexity and broad application, are difficult and costly to enforce. For example, rates for some preferred-rate publications, like their regular-rate counterparts, vary according to the percentage of advertising matter they contain--a cumbersome standard to apply. A final drawback of artificially low postal rates is their tendency to promote overuse of postal services. For many not-for-profit mailers, subsidized rates encourage excessive and inefficient use of direct-mail solicitation, with poor pinpointing of potential contributors. 6/

REDUCED SUBSIDIZATION AND ITS EFFECTS

Elimination of all revenue forgone appropriations--except those supporting free mail for the blind and otherwise visually handicapped--would result in a savings to the federal government (relative to CBO's baseline) of $715 million for 1984, and a savings of $3.9 billion over the 1984-1988 period (see Table 16). (Total Postal Service revenues in 1983 were $23.6 billion.) These rates would then rise to the levels of general rates currently in effect for each subclass of mail. 7/ For example, for third-class nonprofit mail, the cost of mailing a three-quarter-ounce fund-raising letter (nationwide distribution, presorted) would rise from 5.2 cents to 10.9 cents--an increase of 110 percent. For second-class mailings within a county, the rate per piece for a weekly rural newspaper (weighing four ounces, carrying 50 percent advertising, presorted) would rise from 3.6 cents to 9.1 cents--an increase of 153 percent.

Not-for-profit organizations that rely heavily on direct mail solicitation for fundraising--notably charities--could be seriously affected by the elimination of revenue forgone subsidies. Some groups contend that even small increases in preferred-mail rates would result in severe fiscal straits for thousands of such organizations. 8/ Without adequate advance notice, adjusting to an accelerated rate-increase schedule could be difficult.

The effect on not-for-profit organizations of eliminating the revenue forgone subsidies might be extreme for certain groups, but for all groups as

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6. Information gathered by the Philanthropic Advisory Service of the Council of Better Business Bureaus supports this view. In its publication, Insight (July-August 1981), the PAS observes that ". . . for direct mail to be cost effective, the compilation of mailing lists must be more sophisticated, more selective, more specifically targeted to the most likely donor group."

7. Elimination of the authorization for continuing appropriations for revenue forgone would require changes in Title 39 of the U. S. Code, Sections 2401(c) and 3626.

8. Testimony of Robert Weymueller, on behalf of the American Lung Association and the Alliance of Third-Class Nonprofit Mailers, before the House Subcommittees on Postal Operations and Services and Postal Personnel and Modernization, March 9, 1982.

a body, it would be quite moderate. In general, not-for-profit groups appear not to depend heavily on the Postal Service. Aside from postal subsidies, not-for-profit organizations received an estimated $2.6 billion in 1982 in federal grants. In addition, tax-deductible contributions by individuals generated tax expenditures (federal revenues forgone) of $10.6 billion. Revenue forgone postal subsidies added only about 4 percent to that amount. They represented less than 1 percent of the estimated $60.4 billion in contributions received by not-for-profit organizations in 1982. 9/

In addition, evidence gathered by the Council of Better Business Bureaus' Philanthropic Advisory Service suggests that, for many not-for-profit organizations, fundraising costs constitute an unreasonably high percentage of related contributions. High percentages for fundraising are characteristic of new charities just beginning to build lists of prospective donors, but in the case of older organizations, they may indicate inefficient direct-mail solicitation techniques. 10/ Elimination of postal subsidies would encourage cost-effective use of direct-mail solicitation. At the same time, though, it could create serious problems, especially for the newer organizations that must rely heavily on initial blanket mailings to identify potential donors. An approach that could temper the effect on newer not-for-profit groups needing wide initial canvassing would be a gradual process of transition. One option would be to phase out the subsidy over a period of several years. Over five years, the savings to the federal budget would be $2.4 billion, rather than $3.9 billion if the subsidies were abruptly eliminated in 1984.

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9. See American Association of Fund-Raising Counsel, Giving USA, 1982 Annual Report.

10. The Better Business Bureau Standards for Charitable Solicitations call for fundraising costs not exceeding 35 percent of related contributions. For information on the Council of Better Business Bureaus' standards, see "Revised Standards for Charitable Solicitations Go Into Effect," Insight, January-February 1982. On direct mail solicitation costs and problems, see "Charitable Fund Raising: A Primer," Insight, January-February 1981; and "Directed to You: A Look at Direct Mail Solicitations," Parts I and II, Insight, May-June and July-August 1981. A ten-year model of "typical" annual giving is developed in Robert and Joan Blum's article, "Annual Fund Raising: Profile of Costs, Income, Expectations," from Fund Raising Management Magazine, January-February 1975.

CHAPTER VII. IRRIGATION WATER

The low fee now paid for federally provided irrigation water, recovering less than 10 percent of associated federal costs, could undergo little immediate change as a result of any new legislation. Long-term contracts between farmers and the Bureau of Reclamation, which furnishes water to farms in 17 western states, would delay until late in the century any offset of the Bureau's roughly $350 million in 1984 spending. Eventually, though, as contracts expired, rates could begin to rise from the current average of about $2 per acre-foot to perhaps $30 for new projects. Federal outlays would diminish not only as a result of higher fees but also as a consequence of increased water conservation and planned irrigation projects not undertaken.

Since the turn of the century, the federal government has provided irrigation water for farms in 17 western states. Today, the Bureau of Reclamation, an agency within the U.S. Department of the Interior, operates facilities that supply water to about one-fourth of all western land that is irrigated. 1/ Of the 30 million acre-feet of water the Bureau now delivers each year, 93 percent irrigates more than 10 million acres. 2/ Though this acreage accounts for only 3 percent of the nation's farmland, its crops are valued at some 9 percent of a year's total U.S. farm output. 3/

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1. State and private projects contribute smaller shares. The Bureau also manages the irrigation portion of U.S. Army Corps of Engineers facilities in the 17 Western states. About 55 percent to 60 percent of Western irrigation water is supplied by groundwater wells.

2. An acre-foot, the unit in which irrigation water is measured, is the amount required to cover one acre of land to a depth of one foot. It equals 325,900 gallons.

3. This acreage consumes about 1 percent of the nation's total water resource. Of the land irrigated, 20 percent produces high-value crops--such as fruits, nuts, vegetables, and seed--which account for

Farmers and other users have always paid fees for this water, but at rates far below either its federal costs or market rates. The initial purpose motivating this subsidy was promotion of the nation's westward expansion and specifically, of settlement and cultivation of arid western land. With settlement of the West now far advanced and an agricultural industry there highly productive, the appropriateness of continued subsidies for irrigation water can reasonably be questioned.

User fees that reflected the full federal costs of irrigation water would further three objectives: reduction of the federal budget deficit, improved cost effectiveness in both public- and private-sector investment, and water conservation. Supplies of water are finite, and the demands of industrial development, population growth, and agricultural expansion exert pressure on this limited resource. But low prices for water tend to discourage conservation, increasing the risks of costly water shortages in times of drought. Higher user fees would encourage the conservation efforts that could spread existing supplies among a greater number of users and increase reserves.

In dollar terms, the short-term benefits of full-cost recovery through user fees would be minor. In 1984, receipts to the U.S. Treasury, combined with savings from reduced expenditures, would probably come to just \$17 million, mounting slowly to a rate of \$120 million over the ensuing four years. In later years, however, combined receipts and savings would rise rapidly, by the year 2000 approaching \$0.5 billion a year (in 1982 dollars)--mostly from reduced spending on unneeded new projects. Several provisions of current policy account for this tardy realization of gains.

CURRENT POLICY AND BARRIERS TO CHANGE

Several factors would complicate the task of setting fees to recover full federal costs. One is the terms under which farmers now buy federal irrigation water. Another is the multiplicity of purposes served by the dams supplying irrigation water. Still another factor likely to impede change is the fact of recent Congressional action concerning the irrigation water subsidy. In passing the Reclamation Reform Act of 1982, which amended

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56 percent of the gross value produced. The other 80 percent of the irrigated land produces cereals, forage, and miscellaneous crops equivalent to 44 percent of the gross value. See House Committee on Public Works and Transportation, Report on Amending and Supplementing Federal Reclamation Laws, Committee Print 97-458 (March 15, 1982) p. 9.

the Reclamation Project Act of 1939, the Congress reaffirmed its commitment to the established principles of Bureau pricing. 4/

The Subsidies Under Current Policy

Several provisions of current law--all reflecting Congressional intent to keep water rates from overburdening farmers--codify subsidies and limit the federal government's flexibility to raise rates. One is the duration of legal contracts under which the government agrees to provide water and the farmer to repay construction costs (plus whatever operating and maintenance costs arise). 5/ Typically, these contracts have terms of 40 or 50 years, reflecting the expected physical life of dams and irrigation canals. Only as these contracts expire could the government alter the terms under which it charges for water.

Another factor is that rates to recover construction costs cannot reflect any interest charge. This interest subsidy generates the largest share of federal irrigation costs.

A third constraint is imposed by the so-called "ability-to-pay" provision, designed to reflect farmers' particular financial circumstances at the time of contract negotiation. Set in some instances as long ago as 30 years, the current ability-to-pay rates fail to reflect the many economic changes--notably inflation--that have occurred in the intervening years. Calculated as the residual after all other expenses (including time and labor) are deducted from projected farm income, ability-to-pay may actually result in a rate lower than interest-free construction costs spread over the life of a long-term contract. In 1981, the Bureau modified its computations of ability-to-pay and stipulated that the rates be adjusted--roughly once

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4. For details, see P.L. 97-293 or Senate Report 97-568 to accompany S. 1409 (September 22, 1982). Title II addressed the issue of federal subsidies for irrigation water.

5. Except as noted, fees in this report do not include operations and maintenance expenses, because irrigators currently repay almost all of these costs. Data used in this analysis come from Water and Power Resources Service, Acreage Limitation, Draft Environmental Impact Statement (1981), pp. II-1-7, and General Accounting Office, Federal Charges for Irrigation Projects Reviewed Do Not Cover Costs (March 3, 1981) p. 26.

every five years. 6/ In practice, however, the farmer still pays either the interest-free rate for construction costs or the ability-to-pay rate, whichever is lower. Depending on circumstances, the Bureau's subsidy may consist not only of the uncharged interest but also of the difference between ability-to-pay and construction costs. 7/

Nonfederal Constraints

State-water law, limiting water transfers, can indirectly restrict the federal government's ability to charge higher fees for irrigation water. Water law in each of the 17 western states is based on the concept of "first in time, first in right." 8/ Under this concept, a party diverting water from a stream and putting it to some beneficial use (such as irrigation) may secure from the state a permit for continued use of that water in perpetuity. Most states, however, restrict such use to the original place and type of use. Some restrict water transfers from a more beneficial use to a less beneficial one, ranking municipal use as the most beneficial, then agricultural, then industrial use. Moreover, nonuse can result in forfeiture of a water right. Under such a system, water rights for irrigation are generally not transferable to other, higher-valued uses. Thus, the combination of low water prices, a "use it or lose it" convention, and legal barriers to water transfers provide farmers an incentive to use their entire allocations, regardless of the efficiency of their use or the demand for water by other parties.

To develop and distribute water for irrigation, the Bureau must first secure a water right from the state in full compliance with state law.

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6. Since 1975, Bureau policy has required periodic adjustment provisions to be included in all new water service contracts. The Reclamation Reform Act of 1982 requires an annual review and adjustment for operation and maintenance costs associated with new contracts.

7. In addition to these two subsidies, some lesser subsidies have occurred: certain costs of projects before 1926 were forgiven, and rates for incremental supplies have sometimes been set by the Congress at rates below Bureau estimates.

8. For details, see George E. Radosevich, Western Water Laws and Irrigation Return Flow, prepared for the U.S. Environmental Protection Agency (August 1978), as cited in Kenneth D. Frederick and James C. Hansen, Water for Western Agriculture, Resources for the Future (1982).

Similarly, any transfer of Bureau water among users or within river basins is also subject to state water laws that may restrict such transfers. Federal reclamation law may further limit the Bureau's ability to transfer water from one use or location to another.

Two types of changes to many western states' water laws could remove impediments to water markets. First, a revised system of temporary or permanent water-rights transfers would make possible a reallocation of water supplies to the most efficient uses. This would affect many judicial and administrative restrictions at the state level. 9/ Second, a system of well-defined water rights based on water consumption, as opposed to diversion, could give users an incentive to conserve. Rather than face forfeiture as a result of nonuse, a user could resell, at a profit, however much water he conserved. 10/

Further Complications at the Federal Level

The multipurpose function of federal dams further complicates the prospect of imposing irrigation user fees. Any one dam may supply--besides irrigation water--water for industrial or municipal uses, hydroelectric

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9. "Water banking" by local agencies could substitute for the protective benefits once attributed to restrictions on transfers written into state water laws. These banks would not actually collect water, but they would instead, arrange transfers among users. Banking would have to be classified as a beneficial use to avoid forfeiture. Such a scheme would not only encourage conservation with resale profits, but it would stimulate water transfers from low- to-high-valued uses. For a more complete discussion, see Sotirior Angelides and Eugene Bardach, Water Banking: How to Stop Wasting Agricultural Water, Institute for Contemporary Studies, (1978).

10. Consumption rights could also alleviate third party problems. Consider a diversion of 100 acre-feet of water, of which 60 acre-feet is consumed in irrigation and 40 acre-feet is returned to the river as runoff from the land. A downstream user can secure the right to use the 40 acre-feet of return flow as if it were normal stream flow. When the original diverter attempts to transfer his water right of the full 100 acre-feet, the downstream user's right can be impaired and a legal battle can ensue. If consumption rights were in effect, only 60 acre-feet could be transferred by the upstream user, thus avoiding third party conflicts. For additional details, see Terry L. Anderson, Ending the Policy Draught, Johns Hopkins University Press (1983).

power, flood control, and recreation. Assigning fair shares of a dam's costs to each of its several uses is difficult. In fact, reclamation law allows the assignment of some irrigation costs to other uses. Thus, while consumers of municipal water and power generated by Bureau and U.S. Army Corps of Engineers' facilities often pay more than the costs of producing these goods, farmers pay less than the costs of providing irrigation water. Correcting such cross-subsidies would be an important factor in setting irrigation water user fees.

ESTIMATING THE VALUE OF THE SUBSIDY

Estimates of the total value of current irrigation water subsidies depend on assumptions about interest rates and various other technicalities. Probably the most complete review is that of the Water Resources Council, which placed the subsidy at about 82 percent of full costs. 11/ The Bureau, in a sample of 18 districts, found the average total subsidy to be 78 percent of full costs. 12/ A General Accounting Office (GAO) study of six projects, either under construction or proposed for funding, determined that the subsidies would be about 92 percent of the allocated full costs of the project, assuming an interest rate of 7.5 percent. The GAO concluded that about 75 percent to 80 percent of the total subsidy was attributable to the interest subsidy. 13/ On a cash-flow basis, current payments total about 10 percent of Bureau spending on irrigation. An 80 percent subsidy means that full-cost recovery would require farmers to pay rates that were, on average, five times current fee levels.

FULL-COST RECOVERY

As with other government services, full-cost recovery for irrigation water would be based on three principles. First, capital and operating costs of multipurpose facilities would be allocated equitably among the major

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11. See U.S. Water Resources Council, Options for Cost Sharing: Implementation and OM&R Cost Sharing for Federal and Federally Assisted Water and Related Land Programs, Part 5A (November 1975).

12. See U.S. Department of Interior, Bureau of Reclamation Acreage Limitation, Draft Environmental Impact Statement (March 16, 1981), pp. II-I and II-VII.

13. See General Accounting Office, Federal Charges for Irrigation Projects, pp. 26-28.

classes of users--irrigation, power, flood control, and recreation. Second, users would pay for their allocated shares of capital costs over a reasonable period of time, roughly corresponding to the expected life of a facility. Third, no attempt would be made to recover past subsidies (see Chapter I) or to change rates as stipulated in existing contracts.

The general approach called for under these principles would amortize all allocated capital costs, charge market interest rates, eliminate the ability-to-pay provision, and continue to charge all operating and maintenance costs as they occur. 14/ Most users of Bureau water would not face cost increases for many years because of standing contracts and repayment terms. Some of these contracts have 30 or more years left, so many individual farmers might never need revised or additional contracts; only certain farmers would face increases.

The charges analyzed below could be applied to projects of four types: rehabilitation work, additions to existing systems, service contracts, and new systems.

Rehabilitation Projects

The Bureau now supplies between two and three million acre-feet of water (less than 10 percent of its total) under "completed" contracts--contracts covering projects on which the original construction work has already been paid for. Most of these are facilities more than 50 years old. As long as farmers pay for operations, maintenance, and rehabilitation, they have rights to this water in perpetuity. Two changes from current practice, however, would be a requirement that all contracts for new rehabilitation be amortized over a reasonable period of time, and adoption of market interest rates.

Rehabilitation contracts on completed projects now total about $20 million to $30 million each year, increasing at about 25 percent a year as more facilities need new work. Most such projects are now amortized over 40 years without interest. Though the duration appears reasonable, interest at the federal long-term bond rate could be charged. The Bureau states that rehabilitation projects take at least three years to complete, so that, if the changes were made effective immediately, receipts from full-cost

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14. Several technical reforms are also assumed in this analysis. Rates would be adjusted to reflect new cost allocations, and water charges would be based on the amount of water delivered rather than the number of acres irrigated.